AMENDMENTS TO THE CLAIMS

(with complete listing)

1-19. (Cancelled)

20. (Currently amended) A sensor array (18′) comprising,

a plurality of sensor pods (12′) each characterized by having a sensor (126) therein operatively coupled to a multiple-bit memory (28′), a processor operatively coupled to said memory, a bi-directional first telemetric communications interface (72) operatively coupled to said memory, and a bi-directional second telemetric communications interface (74) operatively coupled to said memory,

said second telemetric communications interface of a first of said plurality of sensor pods (12′) coupled to said first telemetric communications interface of a second of said plurality of sensor pods (12′), and

a telemetry and control module (21′) communicatively coupled to said first telemetric communications interface of said first of said plurality of sensor pods (12′).

21. (Previously presented) The sensor array of claim 20 wherein,

each of said plurality of sensor pods (12′) is arranged to simultaneously transfer first data from said memory to said first telemetric communications interface and second data from said second telemetric communications interface to said memory.

22. (Currently amended) The sensor array of claim 20 ~~wherein,~~ further comprising,

first pod data defining a first state of said memory of said first of said plurality at a first point in time, ~~is produced by said sensor of said first of said plurality and transferred to said memory of said first of said plurality,~~

second pod data defining a first state of said memory of said second of said plurality at said first point in time, ~~is produced by said sensor of said second of said plurality and transferred to said memory of said second of said plurality,~~

said first pod data defining a first state of a memory element in said telemetry and control module at a second point in time after said first point, ~~is transferred from said memory of said first of said plurality through said first telemetric communications interface of said first of said plurality to said telemetry and control module,~~ and

said second pod data defining a second state of said memory of said first of said plurality at said second point in time. ~~is transferred from said memory of said second of said plurality through said first telemetric communications interface of said second of said plurality and through said second telemetric communications interface of said first of said plurality to said memory of said first of said plurality.~~

23. (Cancelled)

24. (Previously presented) The sensor array of claim 22 ~~wherein,~~ further comprising,

a second state of said memory element in said telemetry and control module defined by said second pod data at a third point in time after said second point. ~~is transferred from said memory of said first of said plurality through said first telemetric communications interface of said first of said plurality to said telemetry and control module.~~

25. (Previously presented) The sensor array of claim 20 wherein,

said plurality includes said first of said plurality, a last of said plurality and at least one inner of said plurality,

each of said at least one inner of said plurality has said first telemetric communications interface coupled to said second telemetric communications interface of a first adjacent of said

plurality and said second telemetric communications interface coupled to a second adjacent of said plurality,

said first telemetric communications interface of said last of said plurality is coupled to said second telemetric communications interface of one of said at least one inner of said plurality, and

said first telemetric communications interface of said first of said plurality is coupled to said telemetry and control module and said second telemetric communications interface of said first of said plurality is coupled to said first telemetric communications interface of one of said at least one inner of said plurality.

26. (Original) The sensor array of claim 25 wherein,

last pod data is produced by said seismic sensor of said last of said plurality and transferred to said memory of said last of said plurality,

said last pod data is transferred from said memory of said last of said plurality to said telemetry and control module via each of said at least one inner of said plurality, being temporarily stored in said memory of each of said at least one inner of said plurality, and via said first of said plurality, being temporarily stored in said memory of said first of said plurality.

27. (Previously presented) The sensor array of claim 20 wherein each of said plurality is further characterized by,

a communications bypass (130) coupled between said first telemetric communications interface and said second telemetric communications interface,

said communications bypass having a switch element (132) having a first state which enables said bypass and a second state which disables said bypass.

28. (Previously presented) The sensor array of claim 27 wherein each of said plurality is further characterized by,

said switch element (132) being controlled by said sensor pod (12′) in response to a signal received at said first telemetric communications interface (72).

29. (Original) The sensor array of claim 28 wherein,

said signal originates from said telemetry and control module (21′).

30. (Original) The sensor array of claim 28 further comprising,

a surface controller (20′) coupled to said telemetry and control module (21′), wherein said signal originates from said surface controller.

31. (Currently amended) The sensor array of claim 28 wherein,

said signal originates from said second telemetric communications interface (74) of an adjacent one of said plurality of sensor pods.

32. (Previously presented) The sensor array of claim 29 wherein,

said switch elements (132) of each of said plurality are in said first state, and

each of said plurality of said pods nearly simultaneously receives said signal at said first telemetric communications interface from said telemetry and control module (21′).

33. (Previously presented) The sensor array of claim 29 further comprising,

a surface controller (20′) coupled to said telemetry and control module (21′), wherein said switch elements (132) of each of said plurality are in said first state, and

each of said plurality of said pods nearly simultaneously receives said signal at said first telemetric communications interface from said surface controller (20′).

34. (Original) The sensor array of claim 32 wherein,

said signal causes said sensors (126) of each of said plurality to measure data and transfer said data to corresponding said memories (28′) of each of said plurality.

35. (Original) The sensor array of claim 20 wherein,

communication between said plurality of sensor pods uses a communications protocol, and

communication between said telemetry and control module and said first of said plurality uses a communications protocol.

36. (Original) The sensor array of claim 35 wherein

said communications protocol is a serial communications protocol.

37. (Previously presented) The sensor array of claim 20 further comprising,

a repeater (46) coupled between any two of said plurality of pods (12′), said repeater arranged to increase the communications range between said two of said plurality.

38. (Previously presented) The sensor array of claim 20 wherein each of said plurality further comprises,

a clamping mechanism (26′, 122) arranged to releasably clamp said sensor pod to a borehole wall.

39. (Previously presented) The sensor array of claim 38 wherein each of said plurality is further characterized by,

said clamping mechanism (26′, 122) being controlled by said sensor pod in response to a signal received at said first telemetric communications interface (72).

40. (Original) The sensor array of claim 39 wherein,

said signal originates from said telemetry and control module (21′).

41. (Original) The sensor array of claim 39 further comprising,

a surface controller (20′) coupled to said telemetry and control module (21′), wherein said signal originates from said surface controller.

42. (Previously presented) The sensor array of claim 39 wherein,

said signal originates from said second telemetric communications interface (74) of an adjacent one of said plurality of sensor pods (12′).

43. (Previously presented) The sensor array of claim 20 wherein each of said plurality further comprises,

a processor (120) coupled to said memory (28′), said first telemetric communications interface (72) and said second telemetric communications interface (74), said processor arranged to interpret signals received at said first telemetric communications interface and control said sensor pod.

44. (Original) The sensor array of claim 20 wherein,

said sensor is a seismic sensor.

45. (Previously presented) The sensor array of claim 20 further comprising,

a plurality of cables (24′), wherein

each of said plurality of sensor pods (12′) has upper and lower ends and characterized by being arranged to be repeatably coupled and uncoupled to a first and second of said plurality of cables at both said upper and lower ends, and

said plurality of sensor pods are removably coupled together upper end to lower end by said plurality of cables to form a string, with a first end of said string of sensor pods removably coupled to said telemetry and control module with one of said plurality of cables.

46. (Previously presented) The sensor array of claim 45 wherein each of said plurality of sensor pods is characterized by,

having a processor (120) arranged to communicate with said telemetry and control module and with other sensor pods and arranged to store an identification.

47. (Previously presented) The sensor array of claim 46 wherein,

said telemetry and control module can query each of said plurality of sensor pods, and

each of said plurality of sensor pods is arranged to answer a query.

48. (Original) The sensor array of claim 47 wherein,

said telemetry and control module harmonizes with said plurality of sensor pods to establish a unique identification for each of said plurality of sensor pods, and,

said telemetry and control module (21′) registers the position in said string of each of said sensor pods relative to the plurality of sensor pods.

49. (Original) The sensor array of claim 47 wherein,

using a particular identification, said telemetry and control module queries a specific one of said plurality of sensor pods, and

said specific one of said plurality of sensor pods answers said telemetry and control module.

50. (Original) The sensor array of claim 49 wherein,

said telemetry and control module queries about a status of a sensor (126).

51. (Original) The sensor array of claim 49 wherein,

said telemetry and control module queries about a status of a memory (28′).

52. (Original) The sensor array of claim 49 wherein,

said telemetry and control module queries about a voltage level.

53. (Original) The sensor array of claim 49 wherein,

said telemetry and control module queries about a status of a clamping mechanism (26′, 122).

54. (Original) The sensor array of claim 47 wherein,

using a particular identification, said telemetry and control module commands a function of a specific one of said plurality of sensor pods, and

said specific one of said plurality of sensor pods performs said function.

55. (Original) The sensor array of claim 54 wherein,

said telemetry and control module commands to manipulate a clamping mechanism (26′, 122).

56. (Original) The sensor array of claim 54 wherein,

said telemetry and control module commands to manipulate a switch element (132).

57. (Original) The sensor array of claim 54 wherein,

said telemetry and control module commands to control a sensor (126).

58. (Original) The sensor array of claim 47 wherein,

said telemetry and control module simultaneously commands each of said plurality of sensor pods to record data.

59. (Original) The sensor array of claim 47 wherein,

said telemetry and control module nearly simultaneously commands each of said plurality of sensor pods to transmit data.

60. (Original) The sensor array of claim 45 further comprising,

a main controller (20′) coupled to said telemetry and control module (21′).

61. (Previously presented) The sensor array of claim 60 wherein each of said plurality of sensor pods is characterized by,

having a processor (120) arranged to communicate with said main controller and with other sensor pods and to store an identification.

62. (Previously presented) The sensor array of claim 61 wherein,

said main controller is arranged to query each of said plurality of sensor pods, and

each of said plurality of sensor pods is arranged to answer a query.

63. (Previously presented) The sensor array of claim 62 wherein,

said main controller is arranged to harmonize with said plurality of sensor pods to establish a unique identification for each of said plurality of sensor pods, and

said main controller (20′) is arranged to register the position in said string of each of said sensor pods relative to the plurality of sensor pods.

64. (Previously presented) The sensor array of claim 62 wherein,

using a particular identification, said main controller is arranged to query a specific one of said plurality of sensor pods, and

said specific one of said plurality of sensor pods is arranged to answer said main controller.

65. (Previously presented) The sensor array of claim 64 wherein,

said main controller is arranged to query about a status of a sensor (126).

66. (Previously presented) The sensor array of claim 64 wherein,

said main controller is arranged to query about a status of a memory (28′).

67. (Previously presented) The sensor array of claim 64 wherein,

said main controller is arranged to query about a voltage level.

68. (Previously presented) The sensor array of claim 64 wherein,

said main controller is arranged to query about a status of a clamping mechanism (26′, 122).

69. (Previously presented) The sensor array of claim 62 wherein,

using a particular identification, said main controller is arranged to command a function of a specific one of said plurality of sensor pods, and

said specific one of said plurality of sensor pods is arranged to perform said function upon said command.

70. (Previously presented) The sensor array of claim 69 wherein,

said main controller is arranged to command a specific one of said plurality of sensor pods to manipulate a clamping mechanism (26′, 122).

71. (Previously presented) The sensor array of claim 69 wherein,

said main controller is arranged to command a specific one of said plurality of sensor pods to manipulate a switch element (132).

72. (Previously presented) The sensor array of claim 69 wherein,

said main controller is arranged to command a specific one of said plurality of sensor pods to control a sensor (126).

73. (Previously presented) The sensor array of claim 62 wherein,

said main controller is arranged to simultaneously command each of said plurality of sensor pods to record data.

74. (Original) The sensor array of claim 62 wherein,

said main controller nearly simultaneously commands each of said plurality of sensor pods to transmit data.

75-95. (Cancelled)

96. (Currently amended) A sensor array for conducting a downhole survey comprising,

a string (18′) of intelligent sensor pods (12′) each sensor pod including a sensor (126) and a multi-bit memory (28′),

a telemetry and control module (21′) operatively connected to a first end of said string,

means for collecting data with said sensors,

means for storing said data in said memory, and

means for transmitting said data from said memory to said telemetry and control module and vice versa in a bucket brigade transfer, where a bucket brigade transfer is defined by each sensor pod transmitting data stored in the memory of said sensor pod to a memory of an adjacent device in said string of intelligent sensor pods in a first direction and concurrently ~~each sensor pod~~ receiving data, if any, from a memory of an adjacent device in said string of intelligent sensor pods in a second direction opposite said first direction, if any, and storing said received data in said memory of said sensor pod.

97. (Previously presented) The apparatus of claim 96 wherein,

said survey is a seismic survey, and

said data are seismic data.

98. (Currently amended) The apparatus of claim 96 ~~wherein~~ further comprising,

~~said~~ means for transmitting and receiving of data ~~occurs~~ simultaneously by a one of said sensor pods.

99. (Currently amended) The apparatus of claim 96 ~~wherein~~ further comprising,

~~said~~ means for transmitting and receiving of data ~~occurs~~ sequentially by a one of said sensor pods.

100. (Previously presented) The apparatus of claim 96 further comprising,

means for arming each sensor pod within said string to receive a simultaneous trigger signal by enabling a direct communications path (132, 130) along a common conductor (24′, 72) to each sensor pod within said string.

101. (Currently amended) The apparatus of claim [[96]]100 further comprising,

means for powering said string (18′) of intelligent sensor pods (12′) via said common conductor (24′, 72).

102. (Currently amended) The apparatus of claim [[96]]100 further comprising,

means for simultaneously triggering each sensor pod within said string of intelligent sensor pods to begin recording data.

103. (Previously presented) The apparatus of claim 102 wherein,

said triggering is caused by a signal transmitted by said telemetry and control module (21′) along said common conductor.

104. (Previously presented) The apparatus of claim 102 further comprising,

a surface controller (20′) coupled to said telemetry and control module, wherein

said triggering is caused by a signal originating from said surface controller.

105. (Previously presented) The apparatus of claim 100 further comprising,

means for simultaneously triggering each sensor pod to begin said bucket brigade transfer, and

means for disabling said direct communications path (130, 132) after said triggering, forcing communication along said string to flow through said memory (28′) of said sensor pods.

106. (Previously presented) The apparatus of claim 105 wherein,

said triggering is caused by a signal transmitted by said telemetry and control module (21′) along said common conductor.

107. (Previously presented) The apparatus of claim 105 wherein,

a surface controller (20′) is coupled to said telemetry and control module, and

said triggering is caused by a signal originating from said surface controller.

108. (Previously presented) The apparatus of claim 96 further comprising,

means for disconnecting said telemetry and control module (21′) from said string of intelligent sensor pods, and

means for disassembling said string of intelligent sensor pods.

109. (Previously presented) The apparatus of claim 96 further comprising,

means for automatically determining the composition and characteristics of said string (18′) by querying said intelligent sensor pods (12′).

110. (Previously presented) The apparatus of claim 96 further comprising,

means for selectively clamping said sensor pods (12′) to a wall of said borehole (14),

means for selectively unclamping said sensor pods from said wall, and

means for controlling said selective clamping and selective unclamping with said telemetry and control module (20′).

111. (Previously presented) The apparatus of claim 96 further comprising,

means for selectively clamping said sensor pods (12′) to a wall of said borehole (14),

means for selectively unclamping said sensor pods from said wall, and

means for controlling said selective clamping and selective unclamping with a surface controller (21′) coupled to said telemetry and control module.

112. (Previously presented) The apparatus of claim 96 further comprising,

a repeater (46) operatively coupled between two adjacent sensor pods in said string of intelligent sensor pods, whereby said repeater extends a communications range between said two adjacent sensor pods.

113. (Currently amended) A sensor array comprising:

a first sensor pod having a multi-bit first memory and a first sensor disposed therein, said first sensor in communication with said first memory,

a second sensor pod having a multi-bit second memory and a second sensor disposed therein, said second sensor pod connected to said first sensor pod by a first cable segment, said second memory in bi-directional communication with said first memory, said second sensor in communication with said second memory, and

a third sensor pod having a multi-bit third memory and a third sensor disposed therein, said third sensor pod connected to said second sensor pod by a second cable segment, said third memory in bi-directional communication with said second memory, said third sensor in communication with said third memory, whereby

data contents of said second memory is transferred to said first memory and data contents of said third memory is transferred to said second memory in a bucket brigade fashion.